

ABSTRACT

Provided is a magnetic reproducing apparatus capable of controlling a magnetic domain of a free layer, and obtaining a sufficient reproduction output even if the size of an MR device is reduced. The MR device is formed so as to have a laminate structure in which a semi-hard magnetic layer and a first ferromagnetic layer (free layer) are exchange-coupled to each other through a non-magnetic exchange coupling layer. Unlike an abutted junction structure using a hard magnetic layer, the distribution of a magnetic bias applied from the semi-hard magnetic layer to the first ferromagnetic layer becomes uniform, thereby the first ferromagnetic layer is brought into a single magnetic domain state. Moreover, the semi-hard magnetic layer has a moderate coercive force lying halfway between soft magnetism and hard magnetism, so the magnetization direction of the first ferromagnetic layer is not fixed. Therefore, the magnetization direction of the first ferromagnetic layer can be easily rotated, thereby a magnetoresistive ratio can be secured, so even if the size of the MR device is reduced, a sufficient reproduction output can be obtained.